Lysenko and Ochoterena

Notes about the influence of Lysenkoism on the teaching of Biology in Mexico

The Second International Workshop on Lysenkoism
June, 2012

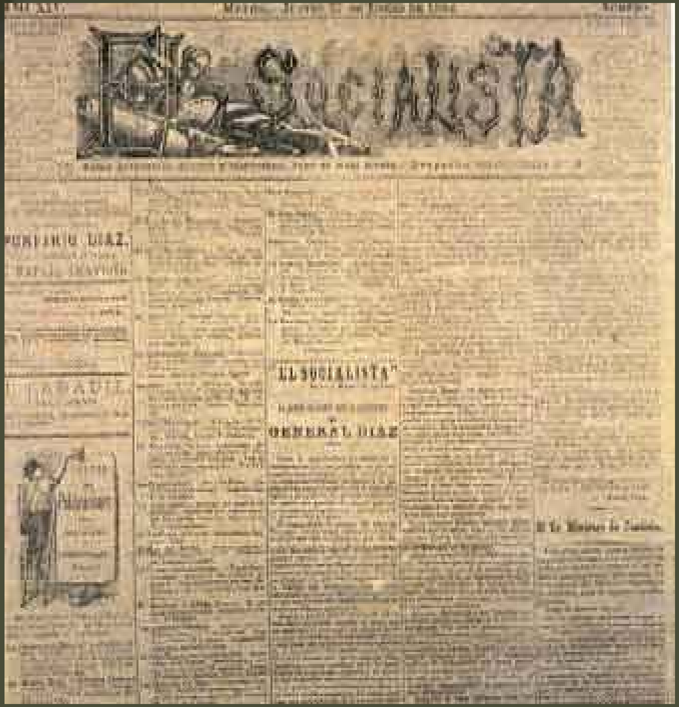
Marietta Blau Saal. University of Vienna. Austria

Dr. Victoriano Garza-Almanza
Universidad Autónoma de Ciudad Juárez
México

Dr. Isaac Ochoterena Mendieta
1885-1950

SOCIALISM AND DARWINISM
IN
MEXICO

- To Mexico, socialism arrived before Darwinism.
- 1871, Juan de Mata Rivera founded the weekly magazine *The Socialist*



EL SOCIALISTA

PORFIRIO DIAZ.

"EL SOCIALISTA"

GENERAL DIAZ

SOCIALISM AND DARWINISM
IN
MEXICO

1877

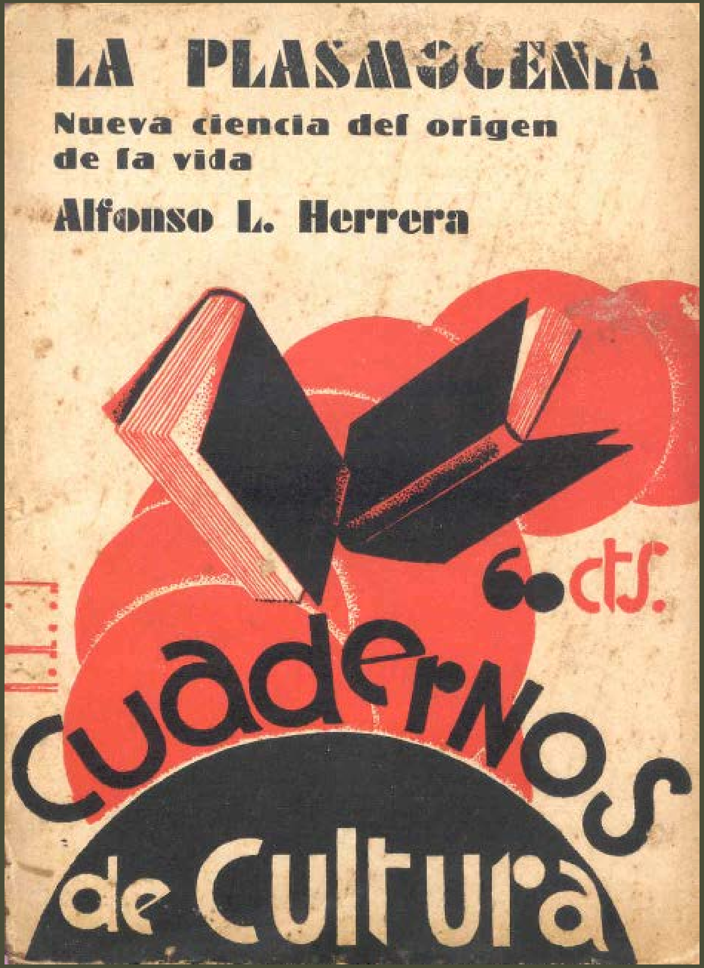
Gabino Barreda founder of the *Methodofila Association*, where Pedro Noriega presented the work: *Considerations about the Darwin theory*.

THE ORIGIN OF BIOLOGY IN MEXICO
ALFONSO L. HERRERA

Alfonso L. Herrera
1868-1942

The first to introduce Darwinism in Mexico

THE ORIGIN OF BIOLOGY IN MEXICO
ALFONSO L. HERRERA



LA PLASMOGENIA

Nueva ciencia del origen
de la vida

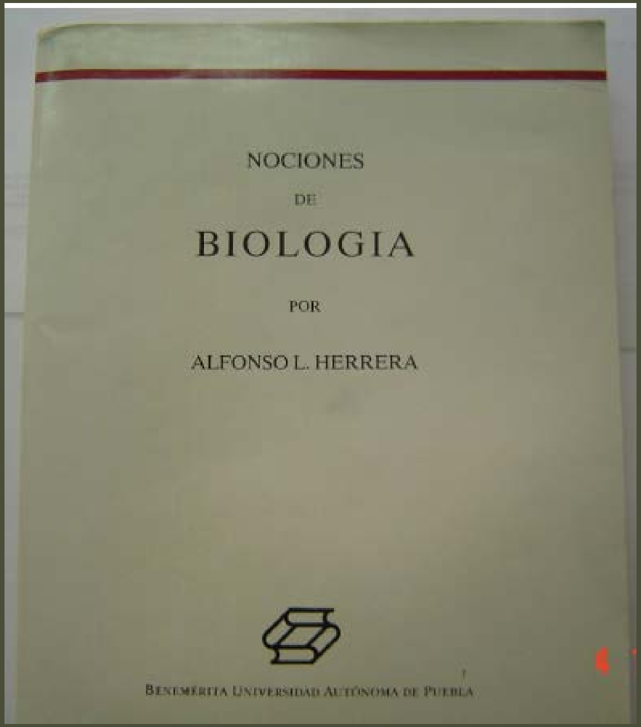
Alfonso L. Herrera

60 cts.

Cuadernos de Cultura

Herrera dedicated over 30 years of his life to studying the enigma of the origin of life. He proposed the *Plasmogenic* theory.

THE ORIGIN OF BIOLOGY IN MEXICO
ALFONSO L. HERRERA



NOCIONES
DE
BIOLOGIA
POR
ALFONSO L. HERRERA

BENEMÉRITA UNIVERSIDAD AUTÓNOMA DE PUEBLA

The first book of Biology in Mexico

DEVELOPMENT AND INSTITUCIONALIZATION OF BIOLOGY IN MEXICO. ISAAC OCHOTERENA. I

Pastor Rouaix

DEVELOPMENT AND INSTITUCIONALIZATION OF BIOLOGY IN MEXICO. ISAAC OCHOTERENA. I

1. 1907 – 1913
   - State of Durango. Mexico.
     School teacher. School director.
     State Public Education Inspector
2. 1914
   - State of San Luis Potosí. Mexico.
     State Public Education General Inspector
     Junior School Teacher
     Botanist, explorer, scientific writer
3. 1915
   - State of Veracruz. Mexico.
     Botanical exploration
   - Mexico City
     National Veterinary School

DEVELOPMENT AND INSTITUCIONALIZATION OF BIOLOGY IN MEXICO. ISAAC OCHOTERENA. I

1915

Direction of Biological Studies

Alfonso Herrera. General Director

A. General and Medical Biology Institution
   - 1916 – 1918
     Isaac Ochoterena. Vegetal Biology Section Chief.
   - Fernando Ocaranza. Experimental Physiology Section Chief

B. Natural History Museum

C. Department of Flora and Fauna Exploration

DEVELOPMENT AND INSTITUCIONALIZATION OF BIOLOGY IN MEXICO. ISAAC OCHOTERENA. I

4. 1917
    - Ochoterena joined the Military Medical School
5. 1918
    - He started as professor at the National Medical School
6. 1920
    - Mexican Society of Biology
    - Mexican Journal of Biology

DEVELOPMENT AND INSTITUCIONALIZATION OF BIOLOGY IN MEXICO. ISAAC OCHOTERENA. I

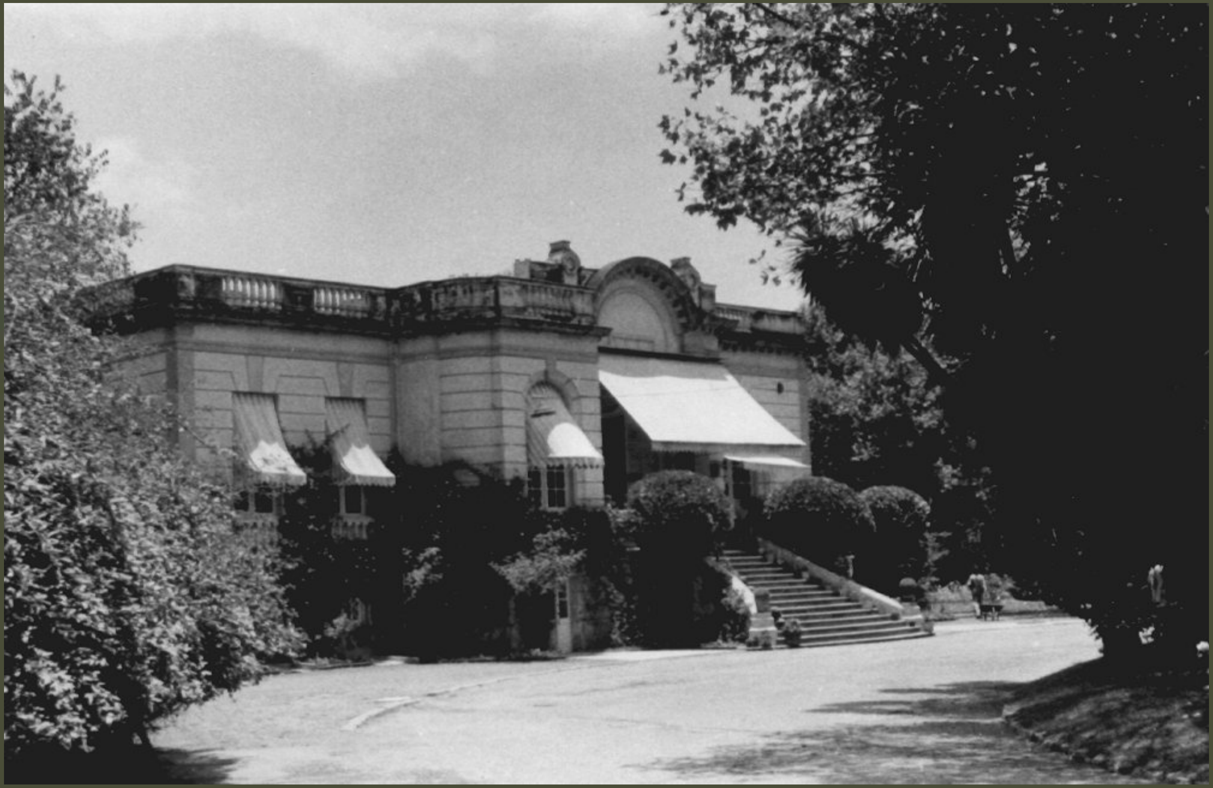
7. 1921 – 1928
   - National High School
     Biology Department Chief

     Appointed by Vicente Lombardo Toledano, National High School Principal

8. 1922
   - *Biology Lessons*. First biology text book in Mexico

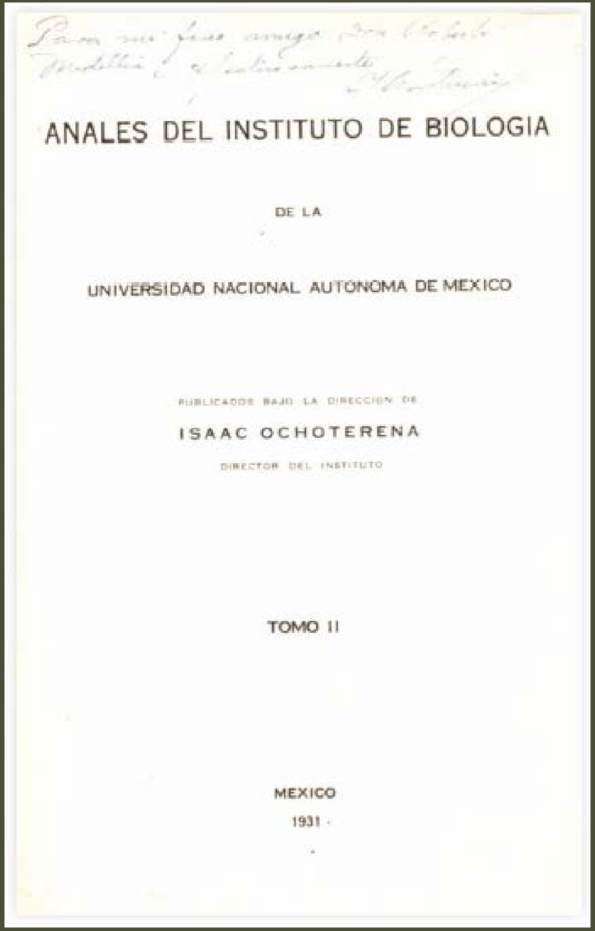
9. 1929 – 1946
   - General Director
     Institute of Biology
     National Autonomous University of Mexico (UNAM)
   - Anales del Instituto de Biología
     Scientific journal, founded in 1930

DEVELOPMENT AND INSTITUCIONALIZATION OF BIOLOGY IN MEXICO. ISAAC OCHOTERENA. I



Institute of Biology. *Casa del Lago*.
UNAM. 1937.
Photo Emil Witschi

DEVELOPMENT AND INSTITUCIONALIZATION OF BIOLOGY IN MEXICO. ISAAC OCHOTERENA. I



Para mi fino amigo Don [illegible]
[illegible]

ANALES DEL INSTITUTO DE BIOLOGIA

DE LA

UNIVERSIDAD NACIONAL AUTONOMA DE MEXICO

PUBLICADOS BAJO LA DIRECCION DE

ISAAC OCHOTERENA

DIRECTOR DEL INSTITUTO

TOMO II

MEXICO

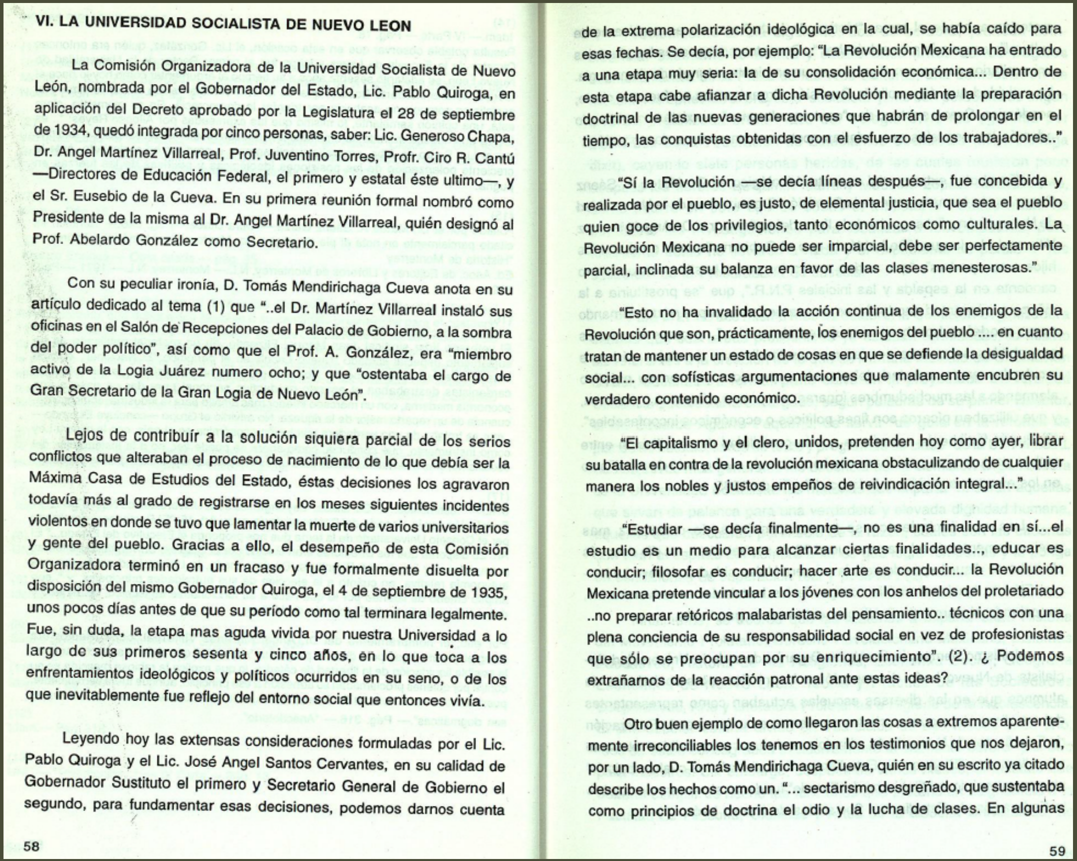
1931

Anales del Instituto de Biología. 1930 - 2012

INTERLUDE: SOCIALISM IN MEXICO

During the Mexican Revolution and the critical post-revolution era, that took around 20 years (1910-1930), Ochoterena lived apart from the armed and ideological revolts.

INTERLUDE: SOCIALISM IN MEXICO



VI. LA UNIVERSIDAD SOCIALISTA DE NUEVO LEON

La Comisión Organizadora de la Universidad Socialista de Nuevo León, nombrada por el Gobernador del Estado, Lic. Pablo Quiroga, en aplicación del Decreto aprobado por la Legislatura el 28 de septiembre de 1934, quedó integrada por cinco personas, saber: Lic. Generoso Chapa, Dr. Angel Martínez Villarreal, Prof. Juventino Torres, Profr. Ciro R. Cantú —Directores de Educación Federal, el primero y estatal éste ultimo—, y el Sr. Eusebio de la Cueva. En su primera reunión formal nombró como Presidente de la misma al Dr. Angel Martínez Villarreal, quién designó al Prof. Abelardo González como Secretario.

Con su peculiar ironía, D. Tomás Mendirichaga Cueva anota en su artículo dedicado al tema (1) que "..el Dr. Martínez Villarreal instaló sus oficinas en el Salón de Recepciones del Palacio de Gobierno, a la sombra del poder político", así como que el Prof. A. González, era "miembro activo de la Logia Juárez numero ocho; y que "ostentaba el cargo de Gran Secretario de la Gran Logia de Nuevo León".

Lejos de contribuír a la solución siquiera parcial de los serios conflictos que alteraban el proceso de nacimiento de lo que debía ser la Máxima Casa de Estudios del Estado, éstas decisiones los agravaron todavía más al grado de registrarse en los meses siguientes incidentes violentos en donde se tuvo que lamentar la muerte de varios universitarios y gente del pueblo. Gracias a ello, el desempeño de esta Comisión Organizadora terminó en un fracaso y fue formalmente disuelta por disposición del mismo Gobernador Quiroga, el 4 de septiembre de 1935, unos pocos días antes de que su período como tal terminara legalmente. Fue, sin duda, la etapa mas aguda vivida por nuestra Universidad a lo largo de sus primeros sesenta y cinco años, en lo que toca a los enfrentamientos ideológicos y políticos ocurridos en su seno, o de los que inevitablemente fue reflejo del entorno social que entonces vivía.

Leyendo hoy las extensas consideraciones formuladas por el Lic. Pablo Quiroga y el Lic. José Angel Santos Cervantes, en su calidad de Gobernador Sustituto el primero y Secretario General de Gobierno el segundo, para fundamentar esas decisiones, podemos darnos cuenta de la extrema polarización ideológica en la cual, se había caído para esas fechas. Se decía, por ejemplo: "La Revolución Mexicana ha entrado a una etapa muy seria: la de su consolidación económica... Dentro de esta etapa cabe afianzar a dicha Revolución mediante la preparación doctrinal de las nuevas generaciones que habrán de prolongar en el tiempo, las conquistas obtenidas con el esfuerzo de los trabajadores.."

"Sí la Revolución —se decía líneas después—, fue concebida y realizada por el pueblo, es justo, de elemental justicia, que sea el pueblo quien goce de los privilegios, tanto económicos como culturales. La Revolución Mexicana no puede ser imparcial, debe ser perfectamente parcial, inclinada su balanza en favor de las clases menesterosas."

"Esto no ha invalidado la acción continua de los enemigos de la Revolución que son, prácticamente, los enemigos del pueblo .... en cuanto tratan de mantener un estado de cosas en que se defiende la desigualdad social... con sofísticas argumentaciones que malamente encubren su verdadero contenido económico.

"El capitalismo y el clero, unidos, pretenden hoy como ayer, librar su batalla en contra de la revolución mexicana obstaculizando de cualquier manera los nobles y justos empeños de reivindicación integral..."

"Estudiar —se decía finalmente—, no es una finalidad en sí...el estudio es un medio para alcanzar ciertas finalidades.., educar es conducir; filosofar es conducir; hacer arte es conducir... la Revolución Mexicana pretende vincular a los jóvenes con los anhelos del proletariado ..no preparar retóricos malabaristas del pensamiento.. técnicos con una plena conciencia de su responsabilidad social en vez de profesionistas que sólo se preocupan por su enriquecimiento". (2). ¿ Podemos extrañarnos de la reacción patronal ante estas ideas?

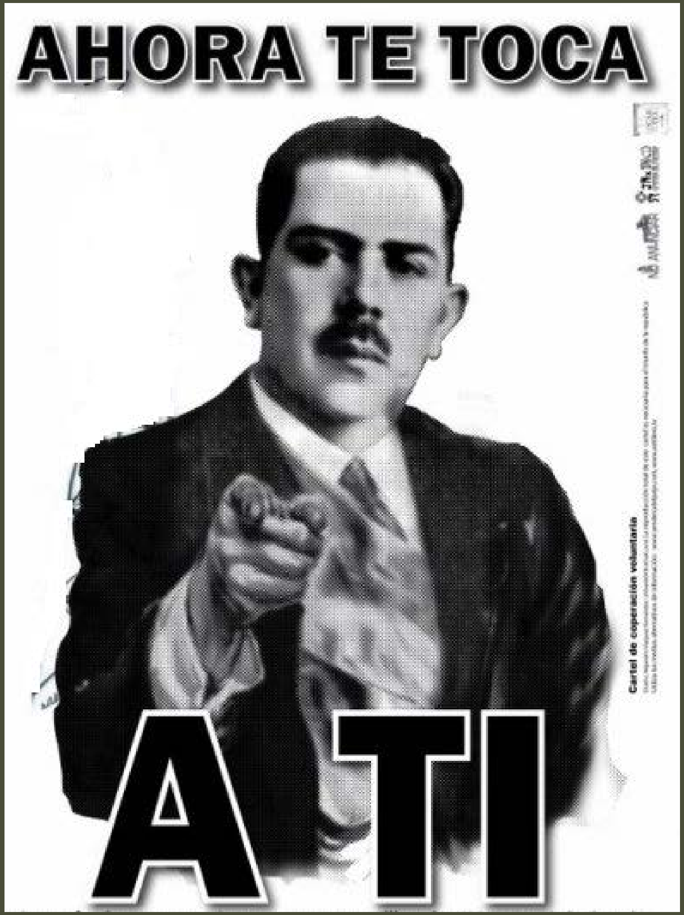
Otro buen ejemplo de como llegaron las cosas a extremos aparentemente irreconciliables los tenemos en los testimonios que nos dejaron, por un lado, D. Tomás Mendirichaga Cueva, quién en su escrito ya citado describe los hechos como un. "... sectarismo desgreñado, que sustentaba como principios de doctrina el odio y la lucha de clases. En algunas

September of 1934. The University of Nuevo Leon was dissolved giving place to the Socialist University of Nuevo Leon.

INTERLUDE: SOCIALISM IN MEXICO

September of 1934. General Lázaro Cárdenas was elected president of Mexico.

INTERLUDE: SOCIALISM IN MEXICO



December, 1934.
Lázaro Cárdenas. One of his first actions was to decree the *socialist education* in the country.

INTERLUDE: SOCIALISM IN MEXICO

December, 1934.
Congress of the Union approving a constitutional amendment concerning the *socialist education*

INTERLUDE: SOCIALISM IN MEXICO

UNIVERSIDAD NACIONAL AUTONOMA DE MEXICO
POR MI RAZA HABLARA EL ESPIRITU

The Autonomous National University of
Mexico didn’t accept socializing its education.

INTERLUDE: SOCIALISM IN MEXICO

1936
National Polytechnic Institute (IPN) was
formed to provide professional education to the
deprived classes.

INTERLUDE: SOCIALISM IN MEXICO

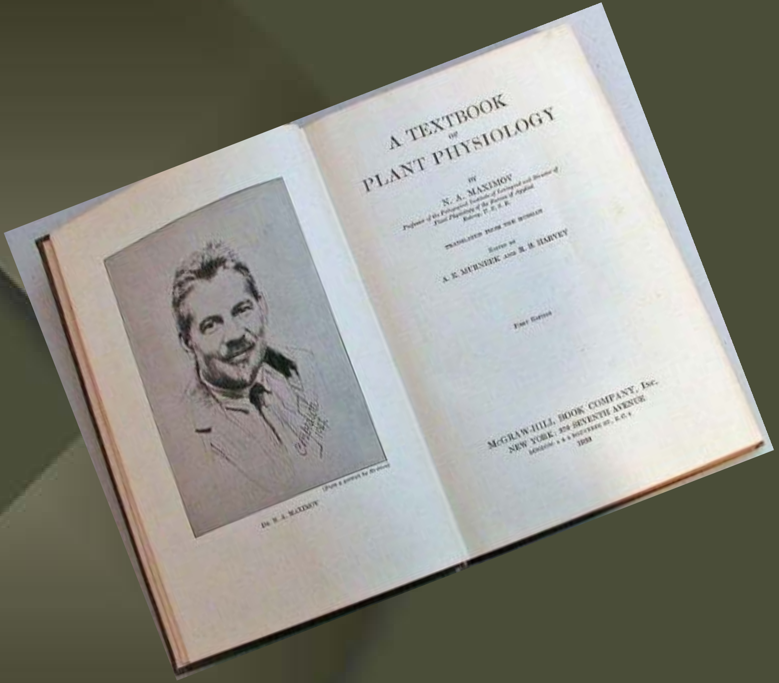
UNIVERSIDAD OBRERA DE MEXICO
Primera sede de la Universidad Obrea de México

1936
Vicente Lombardo Toledano, founder of the Workers University of Mexico

DEVELOPMENT AND INSTITUCIONALIZATION OF BIOLOGY IN MEXICO. ISAAC OCHOTERENA. II

During the 1930s, socialism becomes the official ideology of the Mexican government.

DEVELOPMENT AND INSTITUCIONALIZATION OF BIOLOGY IN MEXICO. ISAAC OCHOTERENA. II



Dr. N. A. MAXIMOV

A TEXTBOOK
OF
PLANT PHYSIOLOGY
BY
N. A. MAXIMOV

TRANSLATED FROM THE RUSSIAN

EDITED BY
A. E. MURNEEK AND R. B. HARVEY

FIRST EDITION

McGRAW-HILL BOOK COMPANY, INC.
NEW YORK: 370 SEVENTH AVENUE
1930

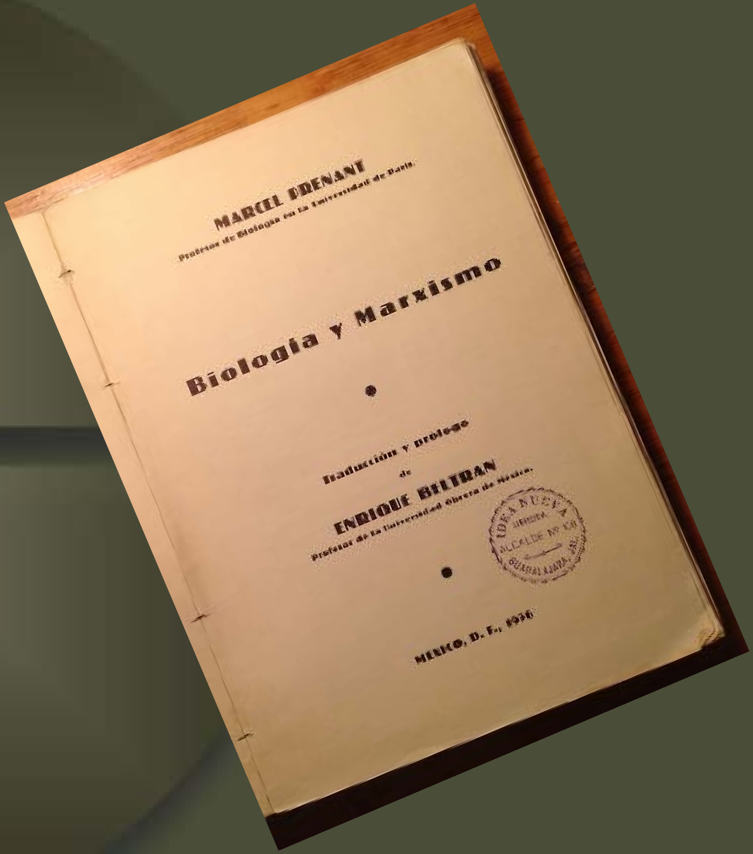
FISIOLOGIA
VEGETAL

NICOLAI A.
MAXIMOV

Un compendio en el que se exponen en forma clara y metódica los conceptos más modernos sobre la fisiologia de las plantas.

The books from Nicolai Maximov introduced the first ideas about vernalization and Lysenko to Mexico

DEVELOPMENT AND INSTITUCIONALIZATION OF BIOLOGY IN MEXICO. ISAAC OCHOTERENA. II



MARCEL PRENANT
Profesor de Biología en la Universidad de París

Biologia y Marxismo

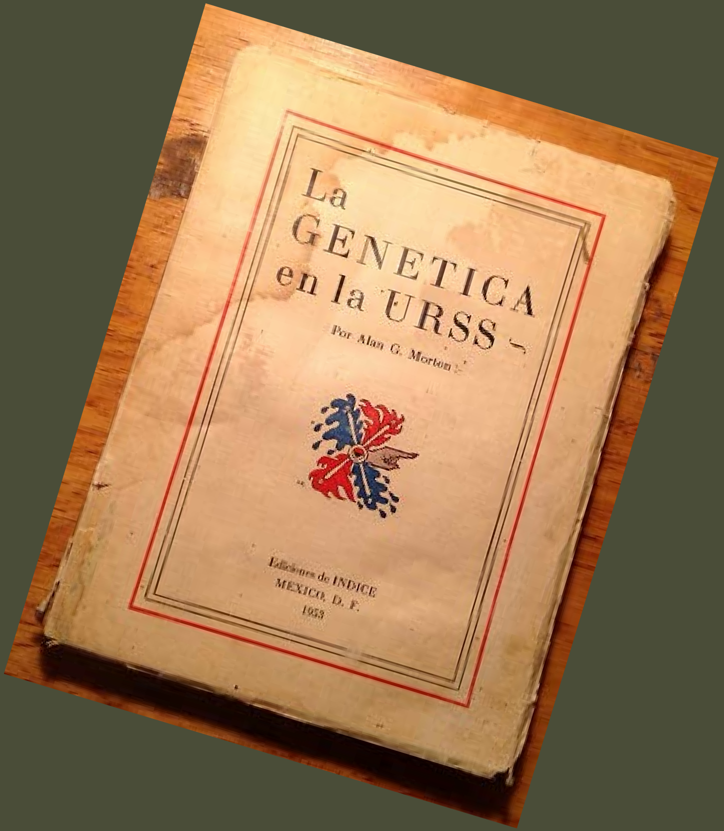
•

Traducción y prólogo
de
ENRIQUE BELTRAN
Profesor de la Universidad Obrera de México.

•

MEXICO, D. F., 1936

IDEA NUEVA
LIBRERIA
ALCALDE No 101
GUADALAJARA, JAL.



La
GENETICA
en la URSS
Por Alan G. Morton

Ediciones de INDICE
MEXICO, D. F.
1953

During the mid-30´s, the Workers University of Mexico, started to publish and spread several works validating Lysenko ideas.

DEVELOPMENT AND INSTITUCIONALIZATION OF BIOLOGY IN MEXICO. ISAAC OCHOTERENA. II

Leon Trotsky and his wife, Natalia, left, meet Frida Kahlo and American Trotskyist Max Shachtman on arrival in Mexico. Stanford Magazine.

DEVELOPMENT AND INSTITUCIONALIZATION OF BIOLOGY IN MEXICO. ISAAC OCHOTERENA. II

Diego Rivera, Leon Trotsky and André Breton
in Mexico

DEVELOPMENT AND INSTITUCIONALIZATION OF BIOLOGY IN MEXICO. ISAAC OCHOTERENA. II

Why the Lysenko´s ideas didn’t affect
Mexican agriculture?

Because after the Mexican Revolution, when almost one million people died:

a. National agricultural production suffered an enormous setback.
b. Because of the Agrarian Reform, 55 million hectares were confiscated to landowners, cut in individual parcels and given to poor farm laborers.
c. Farm laborers were not educated, were extremely poor, and had no tools to work.
d. Because after centuries under slavery, they had lost all knowledge of working the fields, and
e. They didn’t understand fertilizers.

DEVELOPMENT AND INSTITUCIONALIZATION OF BIOLOGY IN MEXICO. ISAAC OCHOTERENA. II

Henry A. Wallace and FDR at Val-Kill Cottage, Hyde Park. August 8, 1940.

New Deal Network.

DEVELOPMENT AND INSTITUCIONALIZATION OF BIOLOGY IN MEXICO. ISAAC OCHOTERENA. II

Norman Borlaug with U.S. Vice President Henry Wallace and Mexican Minister of Agriculture Marte R. Gómez in 1944.

American Academy of Achievement.

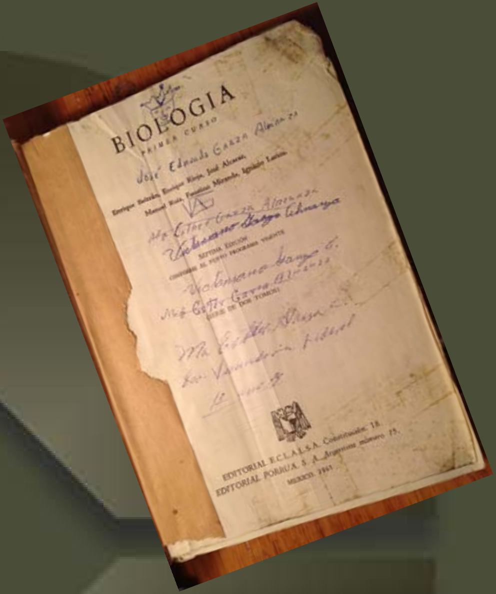
DEVELOPMENT AND INSTITUCIONALIZATION OF BIOLOGY IN MEXICO. ISAAC OCHOTERENA. II

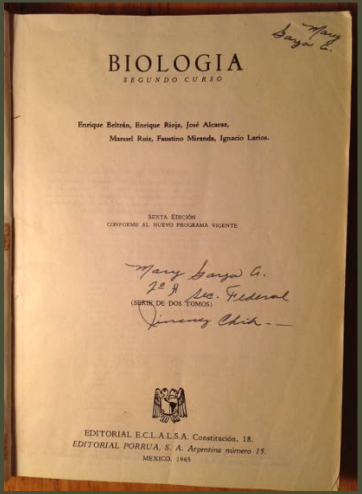
Norman Borlaug and Mexican farmers bring in a record wheat crop.

American Academy of Achievement.

DEVELOPMENT AND INSTITUCIONALIZATION OF BIOLOGY IN MEXICO. ISAAC OCHOTERENA. II

CONCLUSION


BIOLOGIA
PRIMER CURSO
José Eduardo Garza Almanza
Enrique Beltrán, Enrique Rioja, José Alcaraz,
Manuel Ruiz, Faustino Miranda, Ignacio Larios.
SEPTIMA EDICIÓN
CONFORME AL NUEVO PROGRAMA VIGENTE
(SERIE DE DOS TOMOS)
EDITORIAL E.C.L.A.L.S.A. Constitución, 18.
EDITORIAL PORRUA, S. A. Argentina número 15.
MEXICO, 1961


Mary Garza C.

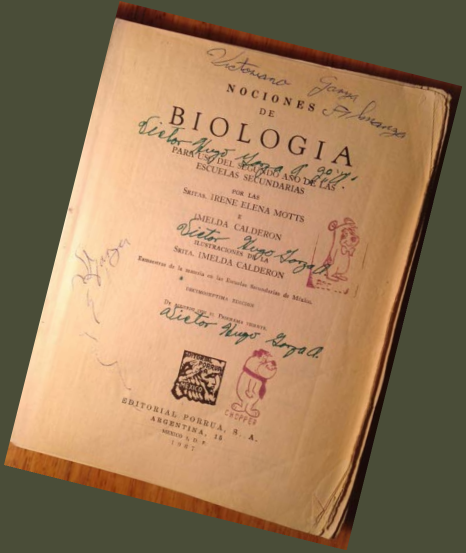
BIOLOGIA
SEGUNDO CURSO

Enrique Beltrán, Enrique Rioja, José Alcaraz,
Manuel Ruiz, Faustino Miranda, Ignacio Larios.

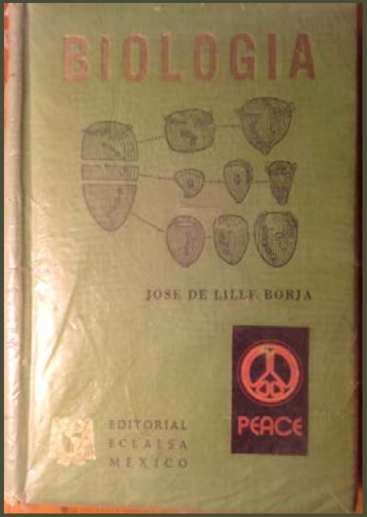
SEXTA EDICIÓN
CONFORME AL NUEVO PROGRAMA VIGENTE

Mary Garza C.
2º A Sec. Federal
(SERIE DE DOS TOMOS)
Jiménez Chih.

EDITORIAL E.C.L.A.L.S.A. Constitución, 18.
EDITORIAL PORRUA, S. A. Argentina número 15.
MEXICO, 1965

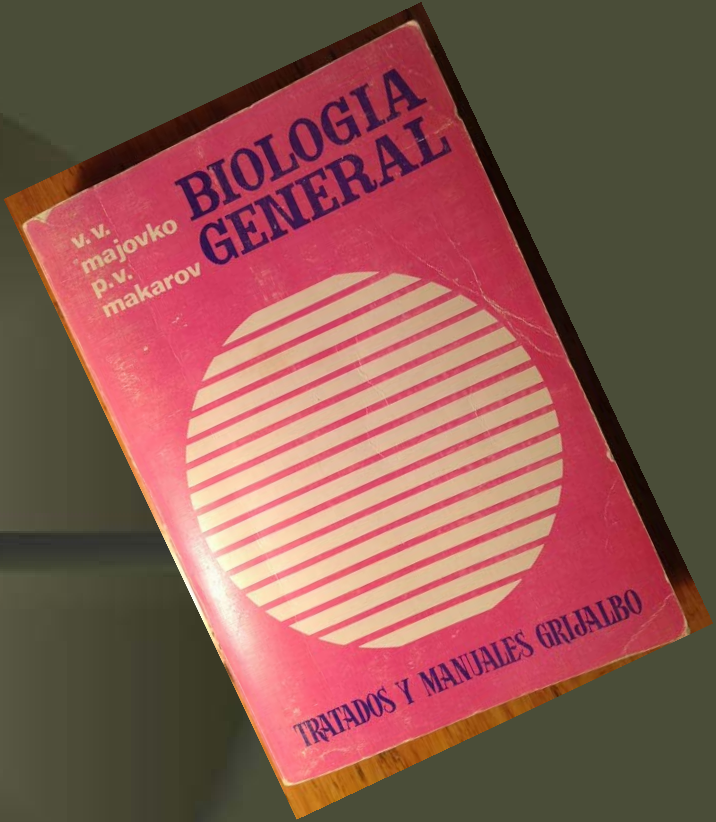

Victoriano Garza Arizmendi
NOCIONES
DE
BIOLOGIA
Victor Hugo Garza A. 2º "I".
PARA USO DEL SEGUNDO AÑO DE LAS
ESCUELAS SECUNDARIAS
POR LAS
SRITAS. IRENE ELENA MOTTS
E
IMELDA CALDERON
Victor Hugo Garza A.
ILUSTRACIONES DE LA
SRITA. IMELDA CALDERON
Exmaestras de la materia en las Escuelas Secundarias de México.
DECIMOSEPTIMA EDICION
De acuerdo con el Programa vigente.
Victor Hugo Garza A.
CHOPPER
EDITORIAL PORRUA, S. A.
ARGENTINA, 15
MEXICO 1, D. F.
1967

The biology text books written first by Ochoterena, then by biologists of that same generation: Jose de Lille Borja, Enrique Beltran, Enrique Rioja, Jose Alcaraz, Irene Elena Motts, among others, suffered the same problem when referring to the heritage topic: they all lacked up to date materials about genetic content.


BIOLOGIA
JOSE DE LILLE BORJA
EDITORIAL
ECLALSA
MEXICO

Some of these authors' books were edited in the 40s, and until the 70s.

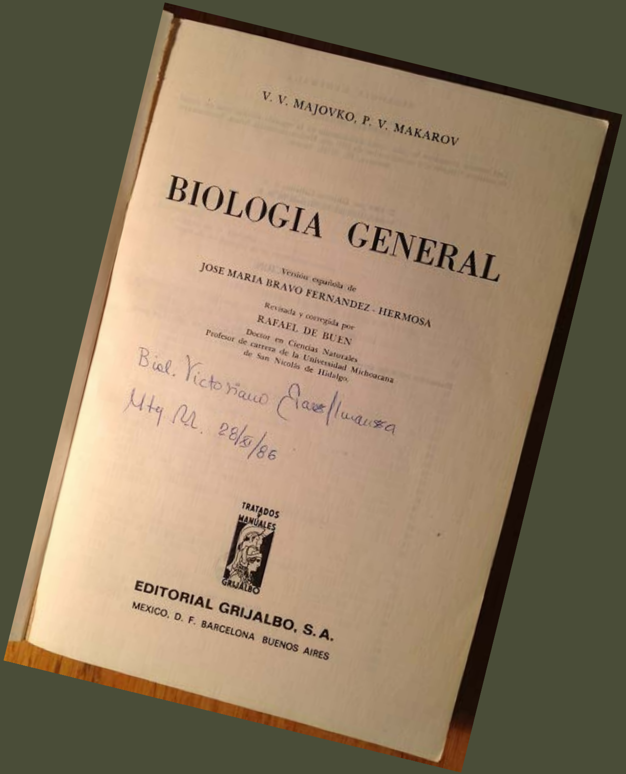
CONCLUSION



v. v.
majovko
p.v.
makarov

BIOLOGIA
GENERAL

TRATADOS Y MANUALES GRIJALBO



V. V. MAJOVKO, P. V. MAKAROV

BIOLOGIA GENERAL

Versión española de
JOSE MARIA BRAVO FERNANDEZ - HERMOSA
Revisada y corregida por
RAFAEL DE BUEN
Doctor en Ciencias Naturales
Profesor de carrera de la Universidad Michoacana
de San Nicolás de Hidalgo.

Biol. Victoriano [illegible]
Mty N. L. 28/X/86

TRATADOS
MANUALES
GRIJALBO

EDITORIAL GRIJALBO, S. A.
MEXICO, D. F. BARCELONA BUENOS AIRES

Mexico also received soviet biology books translated to Spanish like those of J.J. Majovko and P.V. Makarov that yet in the 90s were used in some high schools; these books contained a broad influence of Lysenko’s discourse.

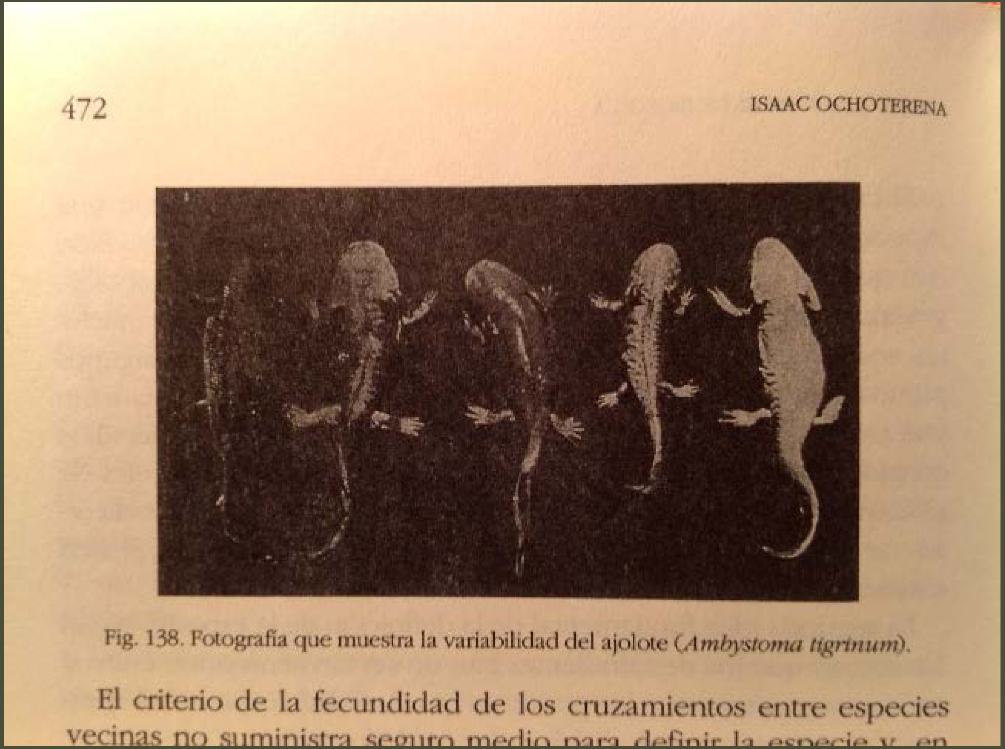
CONCLUSION

Isaac Ochoterena painted by his friend Diego Rivera

CONCLUSION

José Clemente Orozco, Diego Rivera and Isaac Ochoterena
Leftists friends.

CONCLUSION



472 ISAAC OCHOTERENA

Fig. 138. Fotografía que muestra la variabilidad del ajolote (*Ambystoma tigrinum*).

El criterio de la fecundidad de los cruzamientos entre especies vecinas no suministra seguro medio para definir la especie y, en

The axolotl, is an ugly beast under most people’s eyes, but has an intellectual attractiveness for scientists. Maybe this is why he stated that to learn “there are no other possibilities than to turn to imitation, suggestion, the example, and the stimulus…”

Lysenko and Ochoterena: Notes about the influence of Lysenkoism on the teaching of Biology in Mexico

Dr. Victoriano Garza-Almanza
Universidad Autónoma de Ciudad Juárez

The Second International Workshop on Lysenkoism
June, 2012
Marietta Blau Saal. University of Vienna. Austria

ABSTRACT

Lysenko and Ochoterena: Notes about the influence of Lysenkoism on the teaching of Biology in Mexico.

Victoriano Garza-Almanza. Universidad Autónoma de Ciudad Juárez. México.

Isaac Ochoterena (1885-1950), self-made biologist, university professor, military medical school professor, and nationally recognized intellectual, played a significant role in the theoretical development of the biological sciences in Mexico. In 1929, Ochoterena was appointed to be the first director of the National University of Mexico´s Institute of Biology. As an author, Ochoterena wrote more than 230 scientific papers and books, and one of the first Biology textbooks in Mexico (Lecciones de biología, 1922), where he discusses his Lamarckian–Darwinian ideas. This work provides information about how Ochoterena, being the first person in Mexico to know about the ideas of Trofim D. Lysenko (1898-1976) at the end of the 1930´s, and being sympathetic with the socialist ideas of the time, favored the diffusion of what was known as the Proletarian Biology and promoted it through conferences, papers, books and textbooks; and how this impacted for years the approach of biology teaching in Mexican schools.

Second International Workshop on Lysenkoism. The University of Vienna.

INTRODUCTION

SLIDE 1

“To speculate about the intentionality of a character that is impossible to interview is not fair”, asserts an historian of Mexican biology, while another researcher refers to the supposed endorsement Dr. Isaac Ochoterena gave to the Lysenkoism. I think this statement is not valid. If based on documented and registered facts that provide clues to conjecture beyond what is evident, about a supposed reality of the past, are not admitted, then the general history plus unnumbered scientific proposals are also subject to disbelief.

This work was constructed by the searching and analysis of a large number of documents apparently not related to each other, to find an answer to an idea not yet discussed within the history of biology in Mexico, which is: how Lysenkoism influenced the teaching of this subject in the country. If I had attended the instruction suggested by the historian mentioned above, this text would never have been written.

This gives us an idea of how institutional and official historians in the world may handle the truth, and hide in a given moment what could be a dangerous idea as soon as the present becomes the past and, how they take care of eminent characters even if they committed big mistakes during their lives, and how they are kept as science martyrs or heroes of a given nation without remorse.

SLIDE 2

The public figure I am talking about today is Dr. Isaac Ochoterena Mendieta (1885-1950) the most powerful and influential individual in the science of biology in Mexico during the first half of the XX century, as well as how his acceptance of the Lysenkoism was connected to his Socialist political affiliation.

Someone may wonder how a leftist could reach such a high profile in the Mexican community of that era; the answer is easy, if he had been an unwise or a right wing affiliate he may not have had a chance. To understand this, it is necessary to know the context in which this story developed.

SOCIALISM AND DARWINISM

SLIDE 3

To Mexico, socialism arrived before Darwinism. On July the 9th, 1871, Juan de Mata Rivera founded the weekly magazine *The Socialist*, to defend the labor worker. Guillermo Prieto (1818-1897), contributor to Benito Juarez's writing of the Laws of Reform, to punish the clergy for participating in politics and education, and for their role in financing the enemy of the state forces, was another prestigious writer to participate in this project.

The dialectic materialism found a way to speak out throgh *The Socialist*, at the same time, says De Gortari, "positivism is applied as the philosophy for the education set by the state".

In December of 1871, Karl Marx talked about the progress of the International in France, Belgium, Austria, United States of North America and

Mexico and said: “the International has opened in Mexico a massive registration”. On December of 1872, France prohibited the circulation of *The Socialist.*

SLIDE 4

Years later, and in 1877, at the Gabino Barreda Methodofila Association took place the first arguments about Darwinism in Mexico. The work was presented by Pedro Noriega, a medical student, and it was titled: *Considerations about the Darwin theory*. However, biology historians in Mexico don’t consider the work of this student the beginning of Darwinism in the country, they argue that because neither the author nor the audience were biologists, and because a line of research on the subject was not commenced at the time, he can hardly be recognized as the speaker of Darwinism in Mexico.

This way, as Socialism was suffocated by the dictatorship of Porfirio Diaz and expanded intensively under secrecy between labor workers and unhappy thinkers, Darwinism had brief encounters with naturalists of the era.

THE ORIGIN OF BIOLOGY IN MEXICO: ALFONSO L. HERRERA

SLIDE 5

Alfonso L. Herrera (1868-1942), the last Mexican naturalist of the XIX century and the first of the XX century, is considered the first to introduce Darwinism in Mexico. He published his first work on the topic in 1890. In 1897 he published his work in French: *Recueil des lois de la biologie generale* (*Recompilation of the general Biology laws*), and continued working and publishing his evolution ideas until 1904.

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He dedicated over 30 years of his life to studying the enigma of the origin of life. He proposed the Plasmogenic theory and designed and practiced over 4000 experiments to explain the issue.

Ruiz thinks that Herrera’s’ effort went beyond the simple collection and classification of plants and animals, and his idea about the living beings made him reflect and conceive of life in a way never done before in Mexico. Biology should demonstrate, according to Herrera, “important philosophical matters about life facts, and not only organisms’ classification by class, family, tribes, gender, species, sub-species, race or sub-race”. He didn’t approve that the naturalists’ only worries were to collect and classify species.

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In 1902, Herrera established the first biology professorship in Mexico, going beyond the simple history of nature, and in 1904 published the first biology text book in Mexico: *Notions of Biology*. This was his first achievement integrating the mature vision of a biology nourished with his knowledge as a naturalist and his experience as a philosopher of life. This perspective will accompany him the rest of his life and, while searching to explain the living, he was equaled and surpassed by Isaac Ochoterena.

DEVELOPMENT AND INSTITUCIONALIZATION OF BIOLOGY IN MEXICO: ISAAC OCHOTERENA.I

Isaac Ochoterena (1885-1950) was a man without formal education but with the ability to self-educate. At the age of 17 he published his first work: *Something of Paleontology*. He kept on researching and publishing.

In 1906 Ochoterena applied to be an instructor at the Public Instruction and Fine Arts Secretariat (The Ministry of Education), he passed the test and obtained a license to practice as an Elementary School teacher.

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As a devoted naturalist, he organized multiple botanical field trips which got him close to Pastor Rouaix (1874-1949), an explorer, cartographer and political creator, who in 1913 issued the first Agrarian Law, and who, years later would introduce the so called Agrarian Reform. This could have been the starting point for Ochoterena’s encounter with politics and his first socialism ideas.

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After ascending to power, Rouaix gave Ochoterena his first boost and, during the years of 1907-1913 he started to modestly climb positions as school teacher, director, and finally as education inspector in the state of Durango. Far from leaving his vocation behind, Ochoterena used the expanding geographical experience obtained while working to widen research and specialize his teaching on natural history biology and chemistry. He later befriended the state governor, and together they created an herbal exhibition with Durango species that later moved to be the Scientific Collection of the National Herbal display. There, he started an association called *National Scientific Alliance.*

From 1914 to 1915 Ochoterena was the education state director in San Luis Potosi. Even if the Mexican Revolution was at its more critical stage, he continued with his research, publishing and writing a microscopy guidebook. In 1915 Pastor

Rouaix, then vice-minister of the department of promotion, colonization and industry, asks Ochoterena to carry out a botanical exploration in Veracruz, after finishing with it and immediately after he begins to teach histology at a professional level at the National Veterinary School.

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This same year Rouaix received from the Department of Education the Geography Exploratory Commission including a series of infrastructural projects dedicated to biology studies in Mexico, and finally assigned to Alfonso Herrera. From here the Direction of Biological Studies was born, composed of a General and Medical Biology Institution, a Natural History Museum and the Department of Flora and Fauna Exploration.

Herrera invited Ochoterena to participate with him and put him in charge of the Vegetal Biology section.

Ochoterena translated into Spanish the work *Die Mutationstheorie* from Hugo de Vries and composed several writings about evolution emphasizing Lamarck. He continued with his histology works and wrote a handbook about it.

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In 1917 Ochoterena joined the Military Medical School where he met several military doctors who later played a very important role in his life, for at the end of the Mexican Revolution (1910-1920), all Mexican governing heads until 1946, were military.

Ochoterena’s career continued ascending. In 1918 he started as professor at the National Medical School, studied Neurology and founded the embryology chair.

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In 1920 he created the Mexican Society of Biology and the Mexican Journal of Biology (1920-1935). In 1921 Ochoterena was appointed as Biology Department Chief of the National High School. In 1922 due to an assignment from Vicente Lombardo Toledano, principal at the National High School, he writes the *Biology Lessons*, first biology text book in Mexico. Here, Ochoterena reveals his Lamarckian-Darwinian ideas about the acquired characters heritage and illustrates with some experimental cases developed by him.

His relationship with the group of medical scientists, lead by Fernando Ocaranza and Eliseo Ramirez Ulloa, gets closer with time. Also with Lombardo

Toledano, left affiliation leader and ideologist and founder of the Mexican Working Class University, he established a strong bond. His influence within the state's power was growing and as a consequence, within both educational levels: the pre-college and college. His relationship with Alfonso Herrera however, gets colder and distant. Ochoterena begins to lead the research and teaching of Biology in Mexico and would keep them until his death.

According to Ledesma and Barahona, during this stage, Ochoterena "created a group of young disciples" constituted by Eduardo Caballero Caballero, creator of the parasitology in Mexico, Helia Bravo the expert in Mexican cactus, Jose de Lille Borja, outstanding biologist and author of another biology text book of major influence at pre-college levels and, Roberto Llamas, his successor.

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In 1929, the Institute of Biology was created by the National Autonomous University of Mexico (UNAM), and Ochoterena was appointed as the first director, exercising control on study plans and programs, as well as over professors, most of them his disciples. 1930, publication of the scientific journal *Annals of Biology*. His mandate extended from 1929 to 1946.

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INTERLUDE: SOCIALISM IN MEXICO

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During the Mexican Revolution and the critical post-revolution era, that took around 20 years (1910-1930), Ochoterena lived apart from the armed and ideological revolts. His work doesn't reflect the turbulent times the country lived. The biology he developed was an applied one with medical orientation; natural history was left behind. The agricultural problems were not part of his worries. There is no biographer that describes his ideology, but he was always on the winners' side.

At the beginning of the 30s decade, winds were favorable for the Mexican socialism, of which some referred as the age of the Mexican Revolution consolidation and said: "if the Revolution was conceived and carried out by the people, it is of elemental justice the people be the one to enjoy the privileges produced by it, economic and cultural. The Revolution can't be impartial, it must be partial and inclined to favor the most needed classes".

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In September of 1934, the University of Nuevo Leon was dissolved giving place to the Socialist University of Nuevo Leon; this, in the Mexican state with the largest industrial development in the country.

On October the 2nd 1934 a group of students opposed to the socialist project marched on the streets of the City of Monterrey to the Civil College Square. There, armed forces and socialist students attacked the marchers, two protesters died, many were injured.

Paradoxically, on October the 2nd 1968, something similar happened in Mexico City at a much larger scale, the victims this time were socialist students.

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In September of 1934, General Lazaro Cardenas (1895-1970) was elected President of Mexico. One of his first actions was to decree the socialist education in the country.

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The Congress modified the 3rd Constitutional Article where its first paragraph read:

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Article 3rd: The education provided by the state will be socialist, and besides excluding all religious doctrines it will fight all fanatics and prejudice, by which schools must organize their teaching and activities in a way that permit students a rational and exact concept of the universe and the social life.

In 1935, universities and colleges were approached to try and convince them to adapt the socialist educational concept. Elementary and Middle Schools were forced to follow.

This was the time when students at all public schools would sing the International and the Marseilles instead of the Mexican National Anthem.

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The Autonomous National University of Mexico didn't accept socializing its education and, after several fruitless and unfriendly meetings between government representatives and university authorities, President Cardenas gave up.

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However as part of his research and college education policy, and as the first time in the nations' history, Cardenas created the National Council of College Education and Scientific Research. The following year, 1936, the National

Polytechnic Institute was formed to provide professional education to the deprived classes.

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Also in 1936, Vicente Lombardo Toledano, Isaac Ochoterena, the painter David Alfaro Siqueiros, Agustin Yanes and others started the Workers University of Mexico.

INSTITUTIONALIZATION AND DEVELOPMENT OF BIOLOGY IN MEXICO. ISAAC OCHOTERENA. II

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During the 1930s, socialism becomes the official ideology of the Mexican government. All ideas, scientific or any other kind, coming from the Soviet Union is welcome. Mexico, after this, could be considered the first socialist nation in America, 25 years before Cuba.

Isaac Ochoterena is now the most powerful man within the biological sciences in Mexico. President Cardenas appoints him as director of the National Council of College Education and Scientific Investigation. Being Ochoterena more a scientist than a politic, he soon returns to the Biology Institute.

SLIDE 24

The books *The theoretical significance of vernalization*, *and Plants' physiology*, both from Nicolai Maximov introduced the first ideas about vernalization and Lysenko to Mexico. Botanical physiology hence was introduced to Agronomy schools as one more text book.

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During the mid-30s, under the Workers University of Mexico, some left leaning biologists started to publish and spread several works validating Lysenko ideas, among them: *Biology and Marxism* from Marcel Prenant, mentioning the great success of Lysenko and Michurin, and *Soviet Genetics* by Alan G. Morton.

Enrique Beltran, translator and close friend of Prenant and considered the first recognized biologist in Mexico, graduated in 1926 and distanced himself from Lysenkoism after conventional genetics proved its scientificity.

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Just to have an idea about the real power socialism had developed in Mexico during the 30s, President Cardenas conceded political asylum to Leon Trotsky,

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who was welcome at his arrival by a large group of leftist intellectuals. Ochoterena was part of this group, which was led by Diego Rivera and Frida Khalo.

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After all and even with the strong support Lysenko received in Mexico one can ask himself, why his ideas didn't affect Mexican agriculture. The answer is simple: After the Mexican Revolution when almost one million people died:

1) National agricultural production suffered an enormous setback.
2) Because of the Agrarian Reform, 55 million hectares were confiscated to landowners, cut in individual parcels and given to poor farm laborers.
3) Farm laborers were not educated, were extremely poor, and had no tools to work.
4) Because after centuries under slavery, they had lost all knowledge of working the fields, and
5) They didn't understand fertilizers.

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All of this was perceived by Henry Wallace, US Agricultural Department Secretary, and later on the Vice President of the United States (1941-1945), when traveling by car from Washington, D.C., to Mexico City on December of 1940 on a long 5000 kilometers trip, and saw the devastation on the Mexican fields. He observed hundreds of thousands of unproductive acres of land and concluded a famine was ready to start. Mexico's future was at high risk.

Wallace was representing President Franklin D. Roosevelt's government on the arrival of the new elected Mexican President: Manuel Avila Camacho, who stopped Cardenas' socialist revolution once in power.

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Making a long story short, this visit motivated the arrival in Mexico of a scientific mission from the Rockefeller Foundation; by this act, the United States commenced its first foreign agricultural assistant program. Under the project, a group was formed with the participation of 100 Mexican and 22 US researchers. With the US group came Norman Borlaug. During his stay in Mexico, Borlaug created what was known as the *Green Revolution*, which cut short the famine in some way.

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This, we may say, shielded the research and agricultural education from Lysenko's ideas.

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But not on the biology teaching though, Ochoterena and his disciples continued promoting Lysenkoism. In the chapter ‘heritage’ on his book *Elemental Biology Guide,* he says:

“Soviet Agronomists and Biologists have achieved great results these past years. Cereals resistant to cold weather are well known and can be grown in winter time on regions not used by farmers before, such as the Siberia… They have even reached new species by hybridizing the ones in existence or by the process of plant graft on not only different species, but different genres”.

Kumate refers to “the class, announced in 1949 as: *Genetic Biology: the Heritage,* was the last one dictated by Ochoterena, at the National College. The agenda covered 10 lessons, subjects such as: fertilization, embryogenesis, Lamarck, Darwin and Lysenko theories and the pathologic heritage”. He highlights what was probable his last conference:

The works of Lysenko and Michurin, their significance to the progress of agriculture, and to the well-being of the nations.

In 1950, weeks before his death, Ochoterena finished a chapter to be added to his book Elemental Biology Guide simply titled *Lysenko and Michurin.* The chapter was never included in the book by his disciple Roberto Llamas, who was in charge of the Ochoterena legacy.

CONCLUSION

The official story of biology in Mexico for the first half of the XX century, and Ochoterena’s official biography overlook by mistake, or intentionally, the historic concept of the era and moreover how the influence of socialism forced many of the scientists to surrender without complaint to the Lysenkoism.

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The biology text books written first by Ochoterena, then by biologists of that same generation: Jose de Lille Borja, Enrique Beltran, Enrique Rioja, Jose Alcaraz, Irene Elena Motts, among others, suffered the same problem when referring to the heritage topic: they all lacked up to date materials about genetic content. Some of these authors’ books were edited in the 40s, and until the 70s.

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Mexico also received soviet biology books translated to Spanish like those of J.J. Majovko and P.V. Makarov that yet in the 90s were used in some high schools; these books contained a broad influence of Lysenko’s discourse.

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Excusing Ochoterena because of his Lysenkoism, some biologists argue he was not aware of the progressive genetics that was being experienced worldwide. However, the library he created at the Biology Institute had, in 1930, 272 subscriptions to important scientific magazines from all over the world, and thousands of books in its bookshelves.

Another excuse that one of Ochoterena biographers offered was that Ochoterena was” the first one in Mexico that perceived the transcendence of Lysenko’s proposals for the genetic field (…) if these had been real”.

Another author, Argueta et al, says that “to embrace a regressive program like Lysenko’s is not necessarily a sign of darkening”, because things like it happen “every day”. Yet, Ochoterena’s dark vision didn’t die with him; his ideas survived 20 more years with Roberto Llamas, his successor.

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No one talks about Ochoterena’s political affiliation, but he was always close to the left. One of the few statements that show his ideological position was the next one: “… we Mexican naturalists are against the wars, the fascism, and the imperialism”.

Ochoterena was a survivalist in hostile environments since a child until the end of his life. Without any formal education, he was capable of self-training in sciences, writing papers without other guides than his intuition, learning several foreign languages, creating laboratories and academic programs, scientific institutions, organizing biologic expeditions, and climbing to the highest scientific and intellectual ranks in Mexico. Always, he was close to the right people to hold onto and ascend.

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Ochoterena’s favorite character, according to his ex-alumni, was the ‘axolotl’ (*Ambystoma mexicanum),* this, because as he told them out in a class, this amphibious is a master of disguise and survival. The axolotl, is an ugly beast under most people’s eyes, but has an intellectual attractiveness for scientists. Maybe this is why he stated that to learn “there are no other possibilities than to turn to imitation, suggestion, the example, and the stimulus…”

Thank you!